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Book review

Katherine Anderson, *Predicting the Weather: Victorians and the Science of Meteorology* (Chicago and London: The University of Chicago Press, 2005). x + 331 pp. ISBN 0226019683, \$45.00 (hardback). DOI: 10.1177/0963662507084335

In this rich and fascinating book, Katharine Anderson tells a multi-faceted story of meteorology in Victorian Britain. There are two overall points of focus: how meteorologists sought to establish their discipline as a science, and what role weather predictions played in that endeavour.

In this account, the scientists are never detached from the public. Anderson engages deeply with issues such as the establishment of scientific authority in society and the collective production of scientific knowledge. The detailed history recounted in this book is highly worthwhile in itself, but Victorian meteorology also turns out to be a perfect lens through which to view the public aspects of science, as ‘meteorology was a science in which the nature of popular knowledge and its relationship to the world of observatories and precision instruments was explicitly a subject of discussion’ (p. 288).

As Anderson tells us in the Introduction, the ‘path’ of the book is complex, being ‘both thematic and chronological’ (p. 9). It is a book to be savoured slowly in all of its numerous by-ways, not to be rushed through for a simple take-home lesson.

The Introduction and Chapter 1 are unimpeachable, and they duly set the stage for the material to follow. But I think the reader may do well to home in on Chapter 2 quickly, for that is where everything starts to come together powerfully. There Anderson’s awareness of large analytical themes truly comes alive, helped by her sharp eye for the telling detail. Nowadays we take prediction as an obvious aim of meteorology, so most readers will have an educational surprise in learning that in early to mid-19th century weather forecasting was most prominently advocated and practised by astrologers, and largely shunned by respectable scientists as ‘prophecy’, even denounced as an ‘injurious’ and ‘absurd’

practice by the reforming London publisher Charles Knight (p.58). It is also useful to learn that almanacs were the most important places for the publication of meteorological works, and that they were perhaps the most prominent vehicles of popular science in the mid-19th century, selling in the hundreds of thousands each year. Anderson also reminds us that the almanac was a diverse and evolving literary form, as exemplified in her account of the *Illustrated London Almanack* (pp. 60–64), which sought to achieve ‘responsible popularity’.

Anderson gives a wonderful account of the career of Richard James Morrison, popularly known as Zadkiel (pp. 67–79). Zadkiel was an astrologer who campaigned against the legal prohibition of fortune-telling in Britain (which was put into effect in 1824), and his work in weather prediction was guided by the hope that ‘if Astrology ever make its way with the public it must be through the means of Astro-meteorology’. The height of his notoriety came in 1861, when he predicted ill health for Prince Albert, who promptly died of typhoid. This was followed by a public denunciation printed in the *Daily Telegraph*, against which Zadkiel launched a high-profile libel suit. Anderson rightly calls this episode ‘a marvellous vignette of Victorian mores’.

Less flashy but highly controversial within scientific circles was the idea that the moon influenced the weather (pp.46ff). Especially as the possible mechanisms for this presumed influence were at best disputed, the ‘lunarists’ walked a very fine line between astronomy and astrology. Yet the general idea was not easily dismissed. Over in France Lamarck had speculated about it, and Laplace called for a statistical investigation. Reputable scientists such as William Herschel and his son John had ambiguous relationships with lunarist ideas.

Anderson’s fascinating account continues in Chapter 3. In Victorian times the Royal Society had a profound unease with weather forecasting and even meteorology in general. In 1840 it declined the opportunity to take over the running of Kew Observatory, and the task was embraced instead by the British Association for the Advancement of Science, which turned Kew into a centre for meteorological instrumentation (pp. 90ff). More of an

individual initiative was shown by James Glaisher, who 'strove to make himself a national point of reference for meteorological work', by pulling together his work for the Greenwich Observatory, the General Register Office, the General Board of Health, etc., all supported by a network of about 50 observers around the country (pp. 97–99). Even more remarkable was George James Symons and his British Rainfall Organisation, an 'amateur organisation, without either State aid, magniloquent title, managing council or pecuniary resources'; thousands of volunteers sent in daily observations, which Symons coordinated, compiled and published (pp. 99–103).

Despite the significant interest of Glaisher and Symons, the most poignant protagonist of Chapter 3 is Robert Fitzroy, who occupies a central place in Anderson's compelling picture of the ill-fated start of official weather forecasting in Britain (pp. 105–130). Although Fitzroy is best known nowadays as Charles Darwin's captain on the *Beagle*, this devout aristocratic politician was most famous in his own day for meteorology. When the Meteorological Department of the Board of Trade was founded in 1854, the initial focus was on data-collection. It was Fitzroy's initiative, as the Department's first director, to expand its remit to weather forecasts. Prompted by a disastrous storm of 1859 that wrecked 343 ships on British coasts including the famous ironclad *Royal Charter*, Fitzroy began to issue storm forecasts and warnings. Although widely appreciated by those who made practical use of it, Fitzroy's work was derided as inaccurate and unsystematic by many in the scientific establishment. After the overworked, debt-ridden and depressed Fitzroy committed suicide in 1867, the control of the Department (now re-named as the Meteorological Office) was handed over to the Royal Society, which promptly discontinued weather forecasts. Thus began an uneasy period during which the practical promise of weather forecasts remained obvious but the scientific establishment was not willing to take up the responsibility.

Chapters 4 to 6 also contain a great deal of wonderful material, but each of those chapters does not hold together easily in a thematic sense. For example, in Chapter 5 the main theme is presented as the 'visual tools and products of meteorology' including weather maps, cloud photography, and new printing technologies, but much of that chapter is about the dispute concerning non-scientific 'weather wisdom' attributed to common folk. The latter I find a fascinating topic in relation to the general issue of scientific authority, but I am not quite sure that I understand what Anderson has in mind when she

says 'maps built bridges to a model of knowledge known as weather wisdom' (p. 11). Her attempt to put everything together in the conclusion of the chapter is also not quite convincing: 'Telegraphy, the machine that made weather forecasting possible ... was an exemplary "sensible" technology because of its significance as a physiological model of mental processes. Technologies like the telegraph and its offspring the synoptic map mediated between scientific meteorology and popular knowledge' (pp. 232–233).

I take this difficulty as an indication of the irrepressible richness of the material uncovered by Anderson. Why should we expect it all to fit nicely into a few standard-length chapters? Various themes continue from the earlier chapters, and some emerge afresh. I cannot possibly treat all of them in detail, but here is a brief list of what seems most important to me. In Chapter 6 the role of lay observers, noted earlier in Glaisher's and Symons' networks, comes to the fore again in the discussion of meteorology in India, where questions of reliability became more vexed by racism and colonialism. It is also interesting to note that Britain simply did not have the sheer scale of geography required for reliable pattern-recognition in meteorology; the brief comparative story with American meteorology is very interesting (pp. 247–50). The career of Charles Piazzzi Smyth, Astronomer Royal for Scotland, shows someone working at the margins of scientific acceptability: he invented the 'rainband spectroscope', which detected a particular set of spectral lines before rainfall and seemed to exhibit the subtle perceptions of the weather-wise through a scientific instrument (pp. 211–218); he developed cloud photography that emphasised the ephemerality of cloud forms rather than seeking regularities (pp. 222–227); and he produced a 'storm history' that lent support to Fitzroy's kind of forecasting work, and reflected the utilitarian leanings of the Scottish Meteorological Society in opposition to the attitude of the metropolitan scientific elite in London (pp. 237–242).

In summary, I highly recommend Anderson's meticulously researched and thought-provoking book to a wide variety of readers. It is one of the few available in-depth studies of the history of meteorology, but it is also much more than that. One of its chief virtues is the thorough and insightful attention given to the public dimensions of science.

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